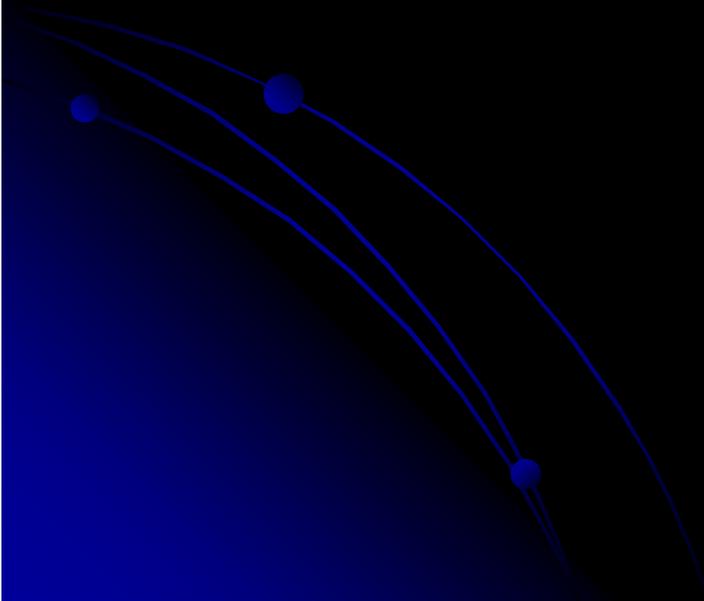


COOL 05

Galena 9/19/05

Pier Oddone



“It is tough to make predictions,
especially about the future”

Yogi Berra

Why then talk about it ?

It is a situation of high tension and drama:

- The greatest physics opportunities
- At the same time the greatest perils!

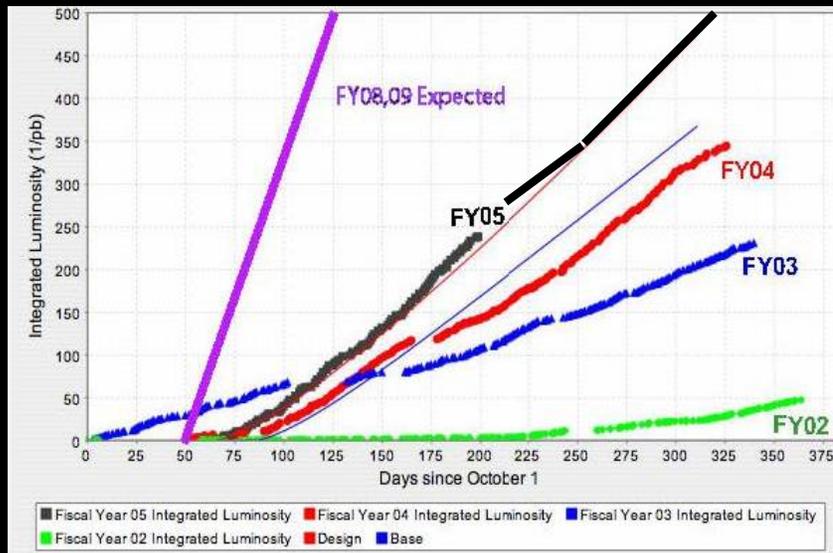


- The most beautiful experience we can have is the mysterious.
- It is the fundamental emotion which stands at the cradle of true art and true science.

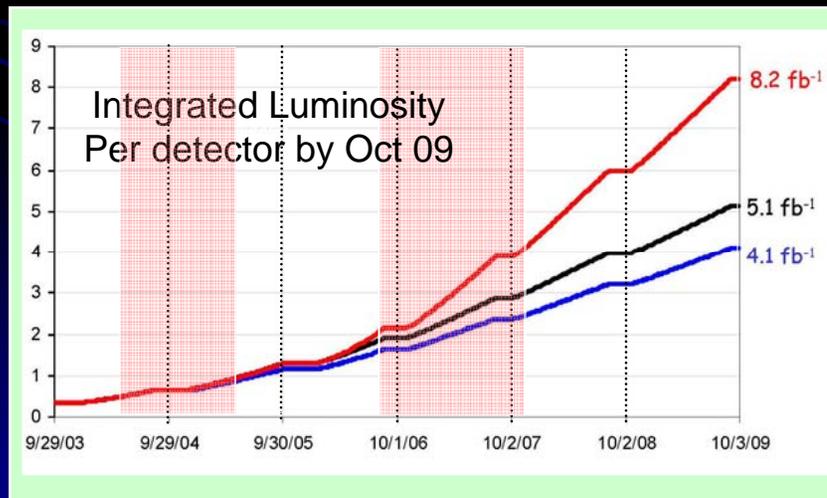
In the short term

- The Tevatron could reach major discoveries: low lying Higgs, supersymmetry, or something totally unexpected.
- Provided the luminosity is much greater than now.
- Most analysis so far <0.5 inverse femptobarns
- Could be 8 inverse femptobarns by the end of the decade
- Essential need (necessary but not sufficient): stochastic and electron cooling

Tevatron: key is luminosity



Luminosity history for each fiscal year



Integrated luminosity for different assumptions

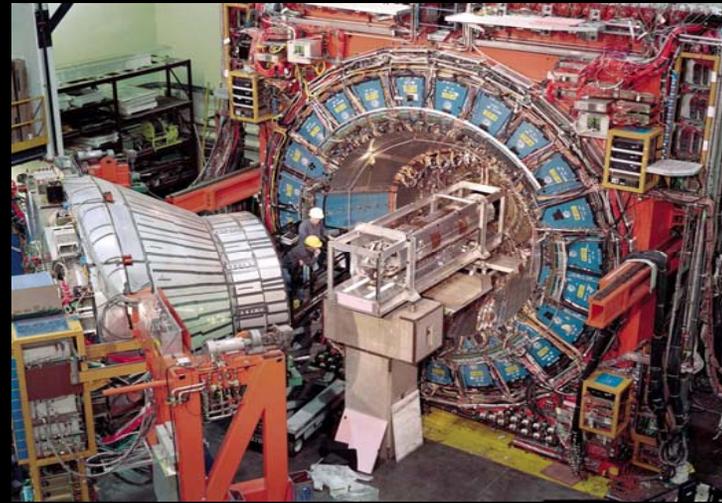
Top Line: all run II upgrades work

Bottom line: none work

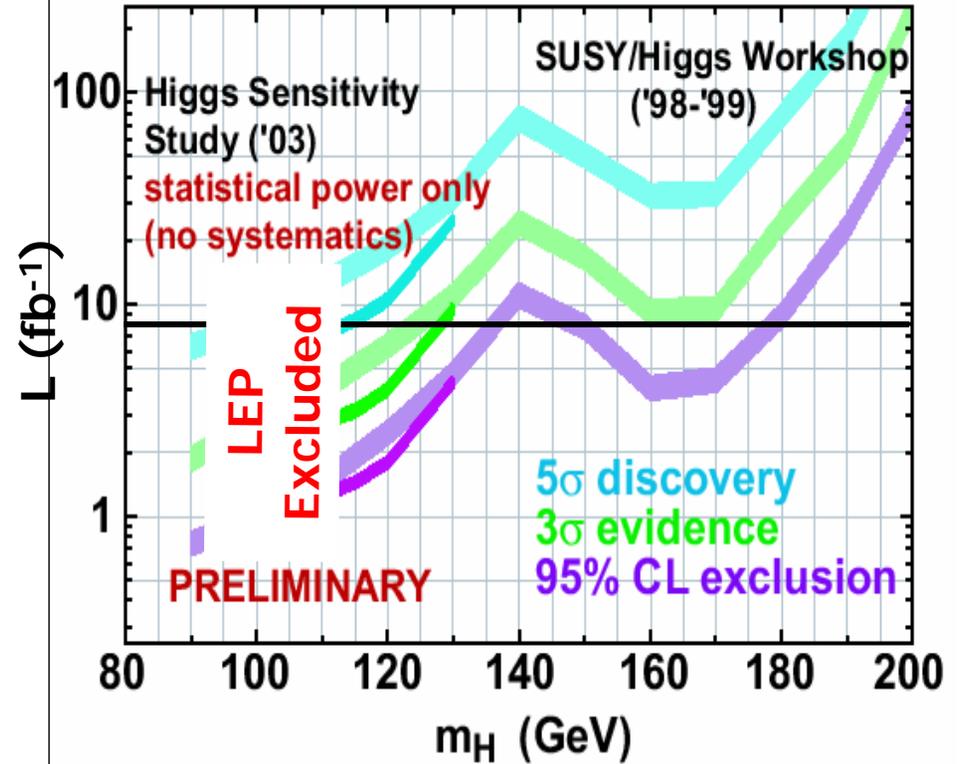
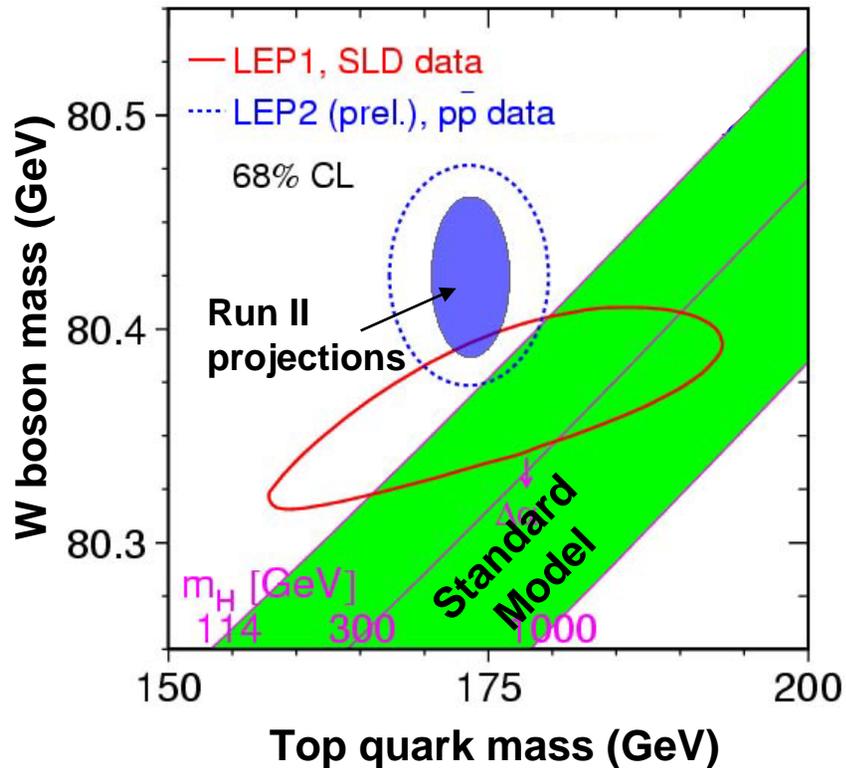
(pink/white bands show the doubling times for the top line) 5

Tevatron Program

- Greatest window into new phenomena until LHC is on
- 1500 collaborators, 600 students + postdocs
- Critically dependent on Luminosity
- Doubling time a major consideration

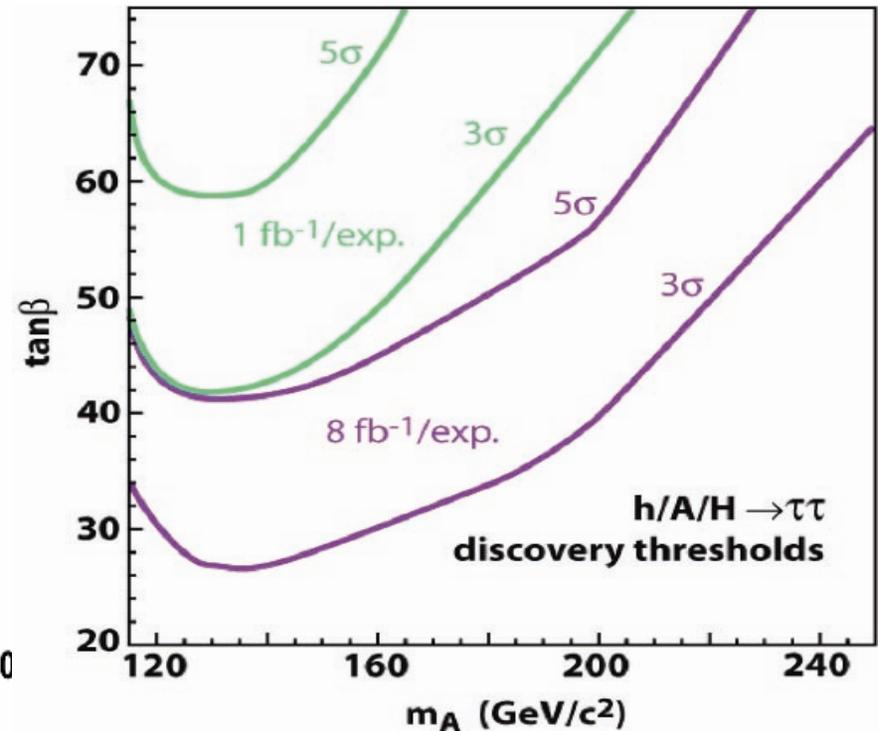
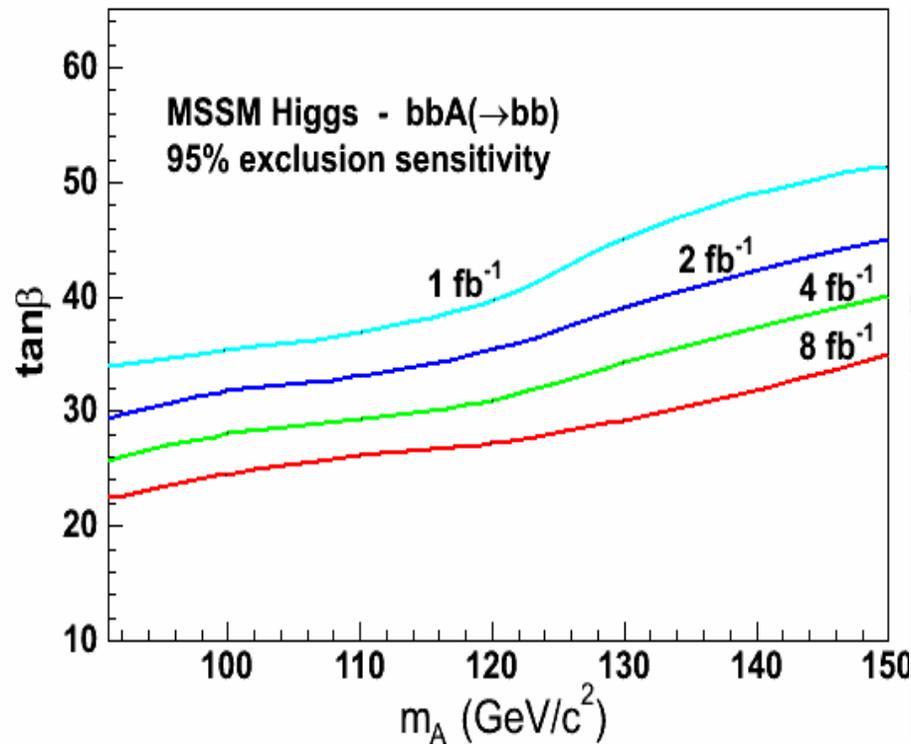


Closing in on the the SM Higgs



- Sensitivity to low mass Higgs, or
- Severely constrain mass

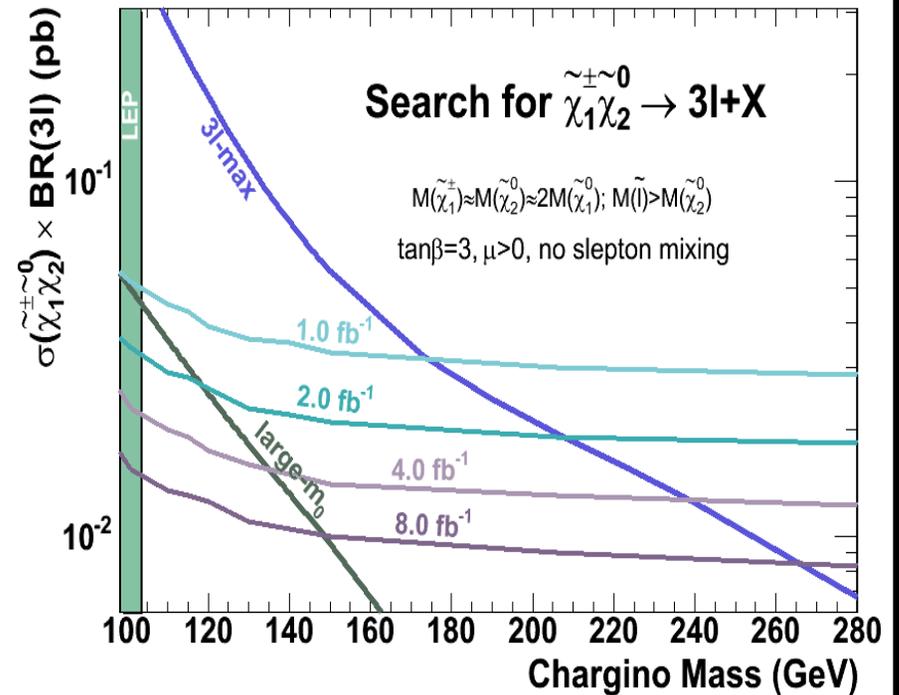
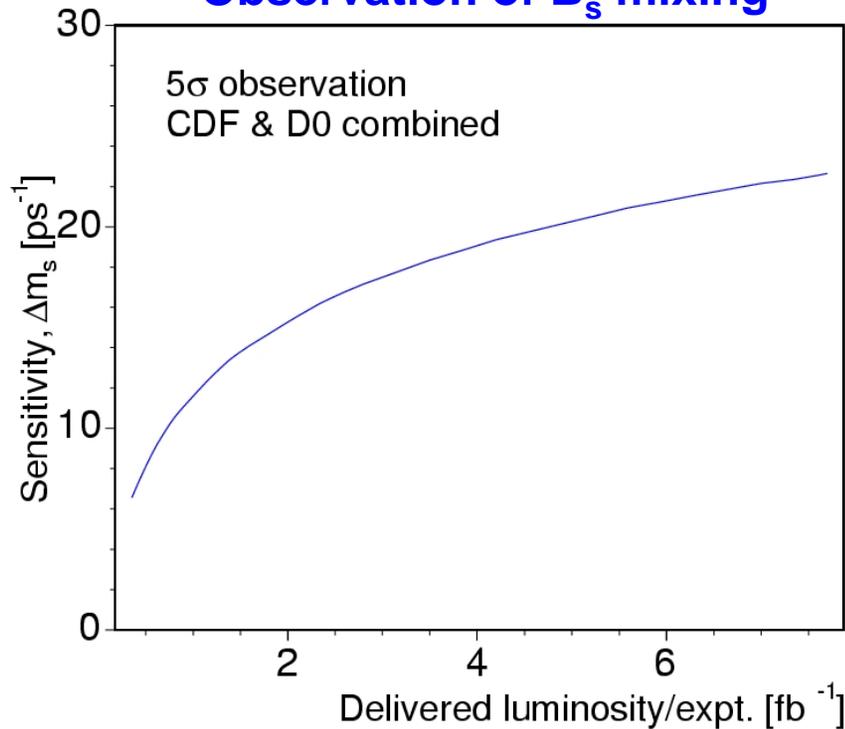
And the non-SM Higgs



Explore the majority of allowed parameters
for the lightest supersymmetric Higgs

Other Windows to New Physics

Observation of B_s mixing



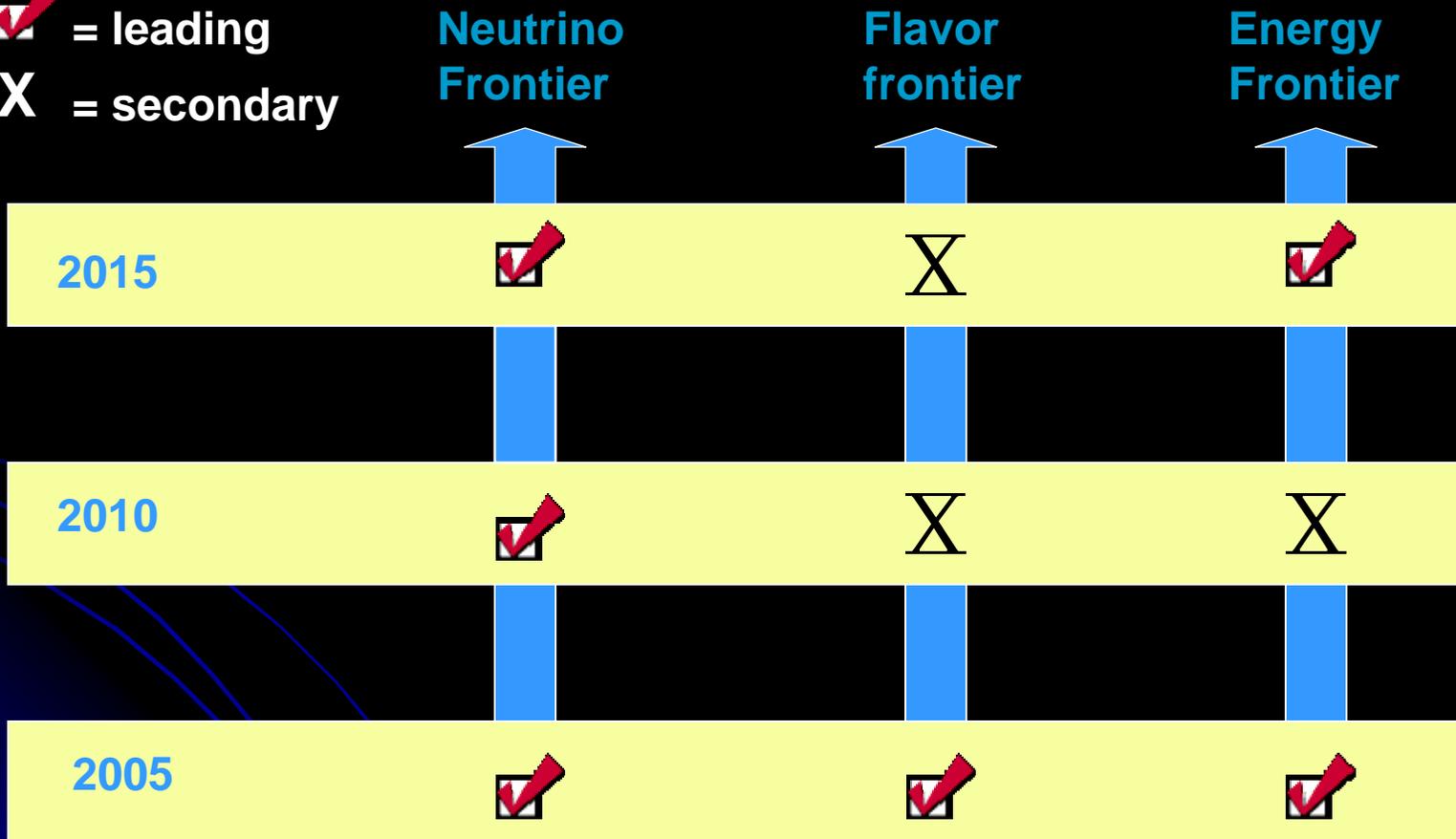
- Discovery Potential over most of B_s mixing expected region
- SUSY Chargino Sensitivity to 270 GeV!

Strategic context: U.S. contribution

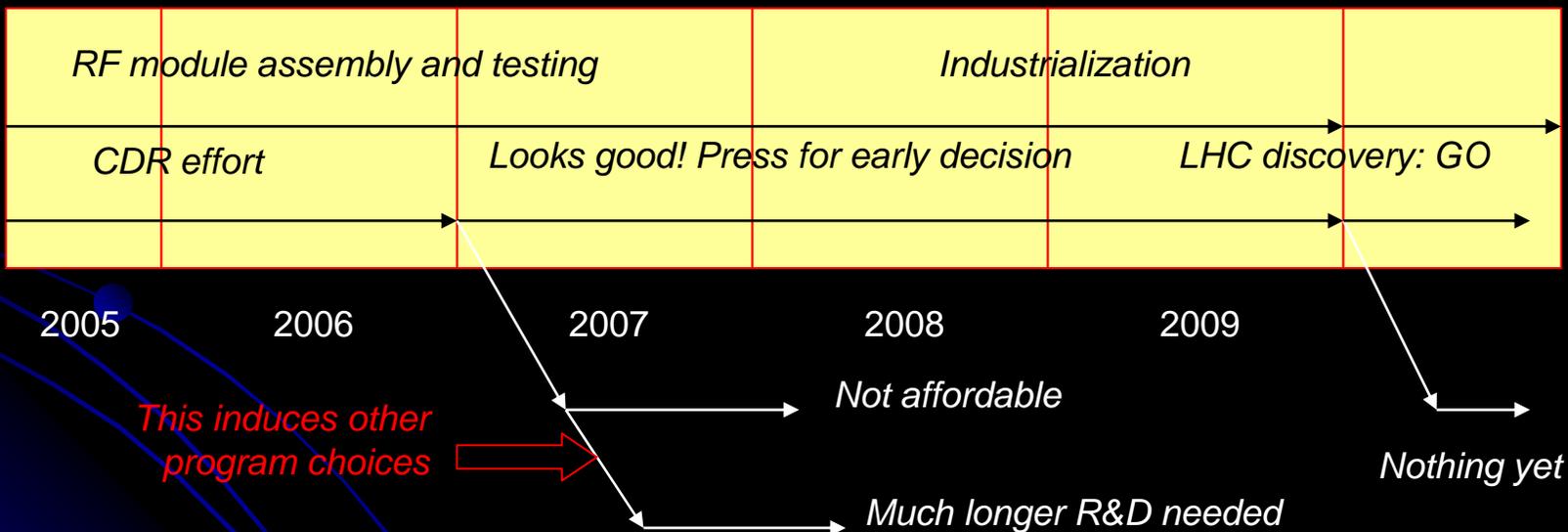
Domestic accelerator program with new and redirected investment

☑ = leading

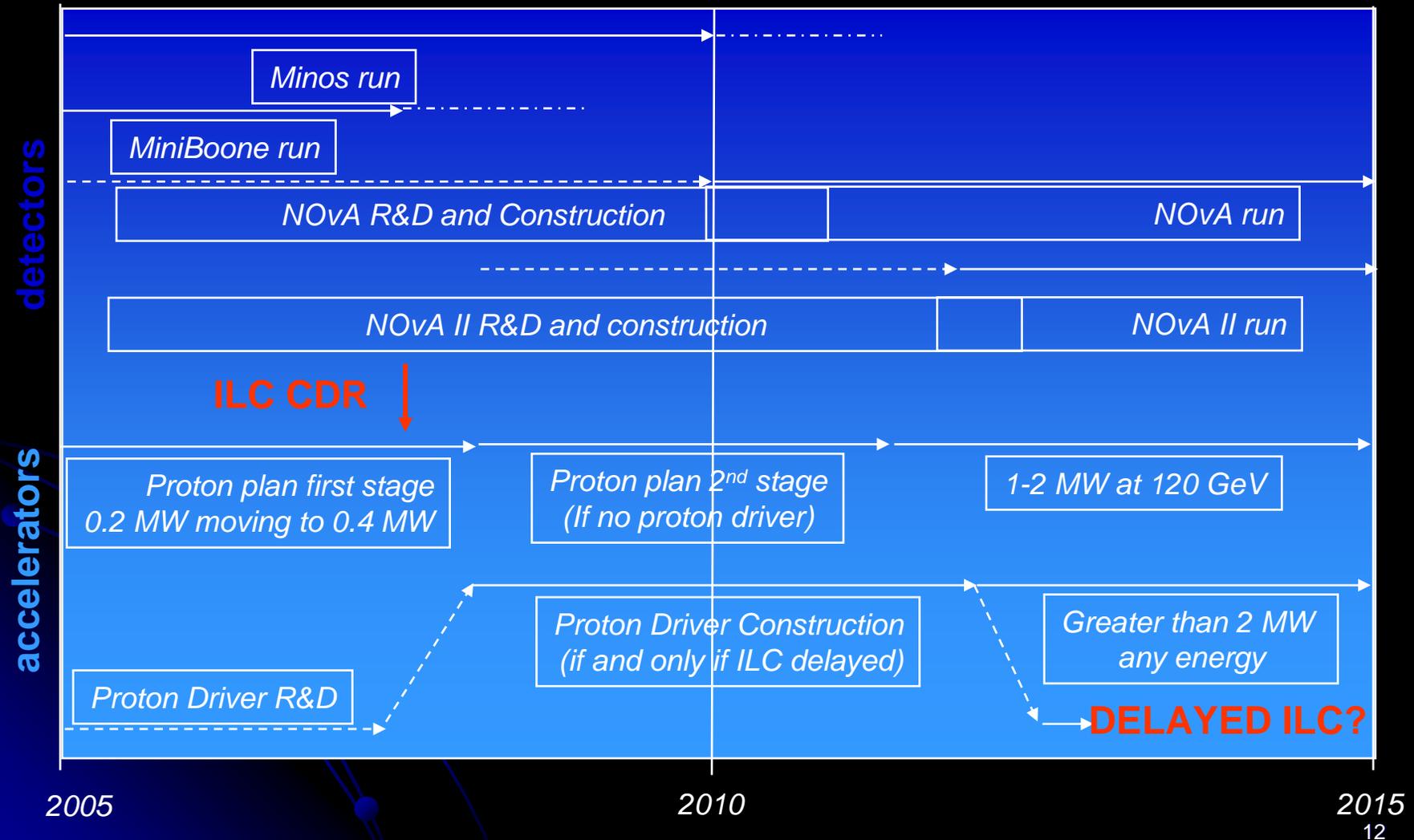
X = secondary



ILC Research and Development Roadmap



Neutrino Program (delayed ILC)



Interlinked Roadmap

- The immediate decisions are: NOvA, and support of ILC R&D and proton driver R&D
- Options get looked two years down the line after ILC CDR: decision to go for early ILC decision precludes proton driver
- LHC input will determine branch points at the end of the decade